

WHAT IS CLAIMED IS:

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1. A multimedia data structure reflecting change of a user
relevance feedback for determining weights of image features
5 used for an image search, comprising:

(a) information describing the features of a certain
image;

(b) recent user feedback information when the weights of
the features of the certain image are learned and determined by
10 the user relevance feedback; and

(c) whole feedback information when the weights of the
features of the certain image are learned and determined by the
user relevance feedback;

(d) wherein the weights of the image features are
15 determined considering both the recent user feedback
information and the whole feedback information, and the image
features according to the determined weights are used for the
image search.

20 2. The multimedia data structure as claimed in claim 1,
wherein the recent feedback information and is determined for a
predetermined time period or by a predetermined frequency.

25 3. The multimedia data structure as claimed in claim 1,
wherein the recent feedback information is a weight value

learned by the recent user feedback or a similar image information, and the whole feedback information is represented by a weight value learned by all the feedback given till now.

5 ~~517~~ 4. The multimedia data structure as claimed in claim 1, further comprising recent user feedback reliability information representing how reliable the recent user feedback information is, and whole feedback reliability information representing how reliable the whole feedback information is.

10 5. The multimedia data structure as claimed in claim 4, wherein the recent user feedback reliability information is expressed by

$$1 - \frac{\left[\sum_{i=0}^{i=m} (N - n_i) \right]}{N}$$

15 where, N is the number of feedback, m is the number of images in the similar image list, and n_i is the number of feedback given to the i -th image.

20 6. A method of determining weights of image features using the multimedia data structure as recited in claim 1, comprising:

representing the recent user feedback information by a similar image list; and

reflecting a recent user feedback pattern by the similar image list using a queue algorithm.

5 77. The method as claimed in claim 6, wherein the queue algorithm comprises the steps of:

(a) checking whether a similar multimedia object exists in a current queue when the corresponding object is fed back;

10 (b) if it is checked that the corresponding object does not exist in the current queue, inputting the corresponding object to an uppermost space of a queue entrance, setting the number of feedback of the corresponding object to "1", and shifting objects existing in the queue to lower positions by one space;

15 (c) if it is checked that the corresponding object exists in the current queue, increasing the number of feedback of the corresponding object, and shifting the objects existing in the queue to upper positions by "N"; and

20 (d) if any object is shifted to the lower position over a size of the queue at the respective steps, deleting the corresponding object from the queue.

8. The method as claimed in claim 7, wherein "N" is fixed or variably determined in accordance with the object.

25 9. The method as claimed in claim 7, wherein "N" is

varied in inverse proportion to the frequency of appearance of the object.

10. The method as claimed in claim 7, wherein if the similar multimedia object does not exist in the queue when the object is fed back, the object is inputted to the queue only in case that the object is fed back more than the specified threshold number.

11. The multimedia data structure as claimed in claim 1, wherein the recent user feedback information is represented as a similar image list, and the similar image list has an image list structure composed of a similar image identification, a score reflecting the current feedback, and a waiting duration representing a time period between the final feedback time point and the present time point.

12. A similar image list managing method for the multimedia data structure reflecting the user feedback change as recited in claim 11, comprising:

managing a similar image list in a manner that only images whose scores are over a predetermined threshold number are maintained in the list, or only images whose scores are N on upper positions of the list if a size of the list is N.

13. A feedback reflecting score updating method for the

multimedia data structure reflecting the recent feedback as recited in claim 11, comprising updating image scores in a manner that:

(a) with respect to images fed back from similar images, a following calculation is performed; and

$$\text{Score}(\text{new}) = \text{Score}(\text{current}) \times \text{fW}(\text{Waiting Duration}) + 1$$

(b) with respect to other images not fed back, a following calculation is performed;

$$\text{Score}(\text{new}) = \text{Score}(\text{current}) \times \text{fW}(\text{Waiting Duration})$$

(c) wherein $\text{fW}(\text{Waiting Duration})$ is a function having the characteristic that it returns smaller value as the waiting duration becomes larger.

14. A method of determining weights of image features in a system for determining the weights of the features used for an image search by the user relevance feedback, the method comprising the steps of:

(a) providing a multimedia data structure including information describing the features of a certain image, recent and whole feedback information for the image, and reliability information of the respective feedback information;

(b) updating the feedback information and their reliabilities by learning them in response to the user feedback; and

(c) determining the weights of the image features in

proportion to reliabilities of the recent feedback information, the whole feedback information, or both the recent and the whole feedback information.

5 15. The method as claimed in claim 14, wherein the recent feedback information is represented by a weight value learned by the recent user feedback or a similar image information, and the whole feedback information is represented by a weight value learned by all the feedback given till now.

10 16. The method as claimed in claim 14, wherein the reliability of the recent user feedback information is determined in proportion to a consistency of a recently used pattern or feedback.

15 17. The method as claimed in claim 14, wherein the reliability of the whole feedback information is determined in proportion to the number of feedback concerned in learning.

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